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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,169	05/09/2001	Terence Neil Thomas	47-17 US	2520

21005 7590 06/24/2005

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EXAMINER	
CHEN, ALAN S	

ART UNIT	PAPER NUMBER
2182	

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/851,169	THOMAS ET AL.	
	Examiner	Art Unit	
	Alan S. Chen	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-33,35-42,44 and 45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26* is/are allowed.

6)☒ Claim(s) *1,27-31,41,42,44 and 45* is/are rejected.

7)☒ Claim(s) *2-5,7-25,32,33 and 35-40* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments and amendment received ~~04/02~~ 02 03/2005, with respect to claims 2-5, 7-26, 32, 33 and 35-40 have been fully considered and are persuasive. The 35 USC 102 and 103 rejections of claims 2-5, 7-26, 32, 33 and 35-40 have been withdrawn.

2. Applicant's arguments with respect to claims 1, 27-31, 41 and 42 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 45 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 45 recites the limitation "the return processing path" in line 1. There is insufficient antecedent basis for this limitation in the claim. Examiner assumes return was intended to mean reverse processing path

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 27-31, 41, 42, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar in view of Olisar et al. (hereafter Olisar).

8. Per claims 1, 27-29, and 41, Molnar discloses a pipeline processor and method (Fig. 1A) comprising: a plurality of processing elements (Fig. 1, each stage denotes a processing element) arranged in a serial array (Fig. 1, stages are arranged serially, one after another), each processing element being bidirectional (Column 11, lines 45-55, Fig. 1B, elements 32 and 36 are reverse and forward processing paths, respectively); and, a clock distribution circuit (intrinsically required to generate the clock, Fig. 4, 78, that goes to each stage), a clock single arriving at each processing element delayed relative to the clock signal arriving at a preceding processing element (it is notoriously well-known in the art latency of the clock as it propagates farther for the clock source), data processed by a processing element in a forward processing is synchronous and based on a state machine (Fig. 4 and Column 16, lines 40-67). When a particular state is enabled by set criteria (Molnar discloses 3 paired state, Column 16, lines 64-66), then the forwarding of the data can commence. This forwarding is done at the rising edge clock. The data forwarded onto the next stage of the pipeline (the adjacent processing element) can only be processed at a *minimum of the next* rising edge of the clock. In other words, the adjacent processing element can only process data after the data is sent from the processing element which originally forwarded the data, which in synchronous systems, requires at least two clock cycles to forward and process.

Molnar does not disclose expressly the fundamentals of how synchronous state machines operate, e.g., the relation of the states to the clock.

Olisar et al. discloses the fundamentals of synchronous state machines (see Background of Invention), where it is required that at least one full clock cycle has elapsed for each output state transition (Column 1, lines 39-46).

Molnar and Olisar are analogous art because they are from the same field of endeavor in synchronous digital design, utilizing synchronous state machines.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to have an adjacent processing element process data forwarded to it by a delayed clock, the clock delay relative to the forward processing element.

The suggestion/motivation for doing so would have been abiding by the fundamental rules of synchronous design.

Therefore, it would have been obvious to combine Molnar with Olisar for the benefit of following the fundamental rules of synchronous design.

9. Per claims 30-31, Molnar combined with Olisar disclose claim 27, wherein the processing elements (Fig. 1A, element) are synched up to an external circuit (Fig. 1A, element 52).

10. Per claims 42, Molnar combined with Olisar disclose claim 41, Molnar further disclosing using the invention for calculation intensive applications (Column 1, lines 15-30), which encryption clearly falls under.

Allowable Subject Matter

11. Claim 26 is allowed.

The following is the statement of reasons for the indication of allowable subject matter:

The prior art disclosed by the applicant and cited by the Examiner fail to teach or suggest, alone or in combination a processing element for use in a pipeline processor comprising two ports, each port receiving a different clock signal, one propagated in a forward direction while the other is propagated in a reverse direction in the pipeline processor; a switch that can operating in two modes, one for selecting the first clock and the other for selecting the second clock signal to use with the processing element.

12. Claims 45 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

13. Claims 2-5, 7-25, 32, 33, 35-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is the statement of reasons for the indication of allowable subject matter: The prior art disclosed by the applicant and cited by the Examiner fail to teach or suggest, alone or in combination, a pipeline processor of claim 1, wherein the reverse processing path in each of processing element has a process time shorter than the process time of the forward processing path. The cited prior art do not discriminate processing time between processing elements, e.g., propagation delay and processing time is equivalent in both forward and reverse directions.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan S. Chen whose telephone number is 571-272-4143. The examiner can normally be reached on M-F 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A. Gaffin can be reached on (571) 272-4146. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ASC
06/13/2005

JEFFREY GAFFIN
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